D. FOLSOM

The Potato News Bulletin

Published Monthly by

The Potato Association of America

VOL. II. NO. 3 MARCH, 1925

IMITATION CERTIFICATION TAGS

H. O. Werner

One of the most serious situations which the growers of certified Triumph seed potatoes in western Nebraska, had to contend with this year, was the competition of one party who attached imitation certification tags to a large quantity of Triumph potatoes shipped into the south. These potatoes had failed to meet the certification requirements of the Nebraska Certified Potato Growers Cooperative or had never been inspected. The tags used were of exactly the same size and almost the exact shade of blue used by the authorized certification organization. The arrangement of the printed material on the face of the tag was also very similar. In the standard of requirements printed on this tag, very general statements were used and whenever reference was made to anything definite as diseases, terms of a rather broad meaning were resorted to.

With potatoes bearing such a tag, very similar to that attached to genuine seed potatoes, and with both lots coming from Nebraska and business actually being done from the same town in Nebraska, it was very difficult for the southern buyer to determine which was really the certified seed. The similarity of the tags was so great that the buyer probably most often never thought to question the genuineness of the product. This so-called certified

seed is reported as having been sold in the southern states at from 30 to 50 cents per cwt. below that asked by the cooperative association which was selling all real certified seed. It was, of course, very difficult to sell certified seed advantageously when misbranded stock could be bought at such a discount. Details concerning this matter are given quite completely in the Kansas City Packer of January 31st.

The writer has seen somewhat similar imitation tags attached to potatoes from at least three other northern states. Probably this practice is getting to be quite a common one. It is unnecessarily confusing the marketing of certified seed potatoes and is a gross injustice to those growers who have built up the certification work with much conscientious hard work. As a very general rule the imitators have never been associated with constructive effort in building up the certified seed industry. Their sole purpose is to receive the margin of price paid on certified seed stock without incurring the cost and doing the work of producing genuine certified seed stock. In view of the nature of the word "certified" it may be difficult for certified growers to protect themselves properly against fraudulent practice. It seems very desirable to have this matter tested out in some court for the purpose of establishing legal precedence. It also seems that it might be advisable for the various states or perhaps some national organization to establish a copyrighted brand name which could be used in lieu of the term certified seed. The rights pertaining to such brand could of course be maintained in any court.

This situation is doing very serious damage to the certification industry in Nebraska. It is discouraging a large number of growers and causing many other growers to question whether all the additional work and expense is worth while if they can secure no protection from such fraudulent practices. It is therefore suggested that all those interested in certifying seed potatoes give very serious thought and attention to this matter. An exchange of ideas and experiences would probably be beneficial. It is quite possible that the Potato Association of America could be utilized as a national organization for combatting this practice, or better, for establishing some system which would make such practice almost impossible.

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THE POTATO NEWS BULLETIN

PUBLISHED BY

THE POTATO ASSOCIATION OF AMERICA

AT WASHINGTON, D. C.

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"Entered as second-class matter May 31, 1924, at the post office at Washington, D. C., under the Act of March 3, 1879."

SUBSCRIPTION PRICE $1.00 PER YEAR

OUR PUBLICATION

The writer cannot emphasize too strongly the fact that this publication belongs to each member. It will be what we make it. Let us keep up the ever-improvement movement. Remember there are two principal channels of assistance. One is by helping to increase the subscription list and the other by making contribution in the form of articles, abstracts and news items. Thus there is an opportunity for every one to render some assistance, either in one channel, or the other or both.

Soon after mailing the February number the writer received a check from J. W. Weston for $25.00 paying for the subscription of 25 members of the Michigan Certified Seed Patato Growers Association. Professor Weston promised more in the near future besides a valuable article for the April number. The other day a check for $51.00 was received from H. C. Moore paying for the subscription of 51 members of the Michigan Potato Producers Association. If the writer made the correct interpretation as he read between the lines in Professor Moore's letter the latter is not going to stop with 51.

The writer is taking this opportunity to express his gratitude for the splendid cooperative spirit of the associate editors and all others who have helped to make this number the best to date.

The time has come when it is essential to have more definite programs in reference to planning material for this publication and to increasing its subscription list. If you have any suggestions to make kindly send them to any of the editors.

The remarks concerning The Potato News Bulletin taken from three letters and which are printed below should be very gratifying to all.—**W. M. P.**

I read with considerable interest the critism of The Potato News Bulletin which was made by one of the experiment station men in the West. In my opinion this bulletin fills a much needed place with potato growers. I know that our Michigan growers will be considerably benefitted by getting such information as this publication contains. Our growers are keen students and progressive men. They want to keep in touch with potato doings in the various sections of the country. Furthermore, they are anxious to get whatever advanced information concerning control of deseases, selection methods, etc. that is advocated by experiment station workers. As an extension and research worker. I find The Potato News Bulletin to be invaluable paper.—**H. C. Moore, Chief of seed potato inspection and certification service in Michigan.**

We have read the February sample number you sent us and we were more than surprised. It sure is a real potato bulletin. Enclosed find check for $1.00 for which send us The Potato News Bulletin for one year. — **Rogers City Co-operative Marketing Asssocitation, Rogers City, Michigan.**

The Potato News Bulletin in my opinion is getting better right along and I believe that if we keep working and improving we should have a membership of 10,000 in a short time if we put things in the publication that will interest everyone.

I believe that the success of the potato industry today is limited to the following things. (1) Smaller acreage. (2) Better certified seed. (3) Extra caution everywhere in grading. (4) Deliver a smaller amount of better potatoes to the consumer at a uniformly better price.—**P. N. Davis, President of the Hollandale Cooperative Marketing Association, Hollandale, Minnesota.**

CHOOSING A PROTECTIVE NAME FOR CERTIFIED SEED POTATOES

Walter M. Peacock.

Our president, H. O. Werner, has pointed out in this publication the need for a protective name or trademark for seed potatoes which are now designated by the term "Certified". The practice of the unscrupulous imitators mentioned by Professor Werner will undoubtedly grow until it becomes prevalent in every section where certified seed potatoes are now being sold, unless some action is

taken. Since the word, certified, is a descriptve term it cannot be registered.

It is the duty of every person interested in the present certified seed potato industry to lend their assistance in helping to solve this problem. The Potato Association of America is willing to do all that is within its power. Through the immediate and united effort of all the potato organizations and the readers of The Potato News Bulletin something effective should be accomplished this year. The growers, dealers and planters of certified seed should be protected. A trade-mark or trade-name for certified seed should be selected.

A trade-mark is a name, symbol or other device put upon goods by the producer in order to distinguish them from similar products. If the name or device is invented or fanciful the users of it may obtain a property right in it. But exclusive property right cannot be secured in a word of common usage. Geographical names and words which merely describe an article cannot become in any sense exclusive trade-marks. A good illustration of the former is the name Cleveland Tractor which could not be registered so the name of this tractor was changed to Cletrac-Tank-Type Tractor. For short, this tractor is known now as the Cletrac. A descriptive name alone is more or less an "Open Sesame" for the deceptive competitors.

A good trade-mark has many uses. Some of the most important ones may be summarized as follows: (1) It establishes identity. (2) It serves as a weapon of offense and defense in active competition. In other words it protects against the substitution of similar goods. (3) A suggestive trade-mark plus products of premanent quality help to build up a good business and becomes a valuable asset. (4) It protects the producer, the dealer and the consumer.

It seems appropos to the writer to offer a few important suggestions in selecting a trade-mark. (1) It should be easy to pronounce. (2) It should be easy to spell. (3) A trade-mark should be distinct and impressive. (4) Short names are better than long names. The word "Kodak" is an excellent example of a short name. It is also virile and dignified besides possessing the other qualifications mentioned above.

Time has come when steps should be taken to protect the results of the painstaking work of the seed potato growers and their co-workers against the unscrupulous imitators. The establishment of a national trade-mark for certified seed potato would not prevent any association or dealer from using its own brand name or even another trade-mark plus the accepted one.

The writer will be glad to receive suggestions on a movement of this kind from any reader, or from any other person who is interested.

INTRODUCTION OF BRITISH COLUMBIA NORTHERN BRAND CERTIFIED SEED POTATOES

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A limited quantity of the following varieties are being offered for sale:

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GREEN MOUNTAIN — BURBANK

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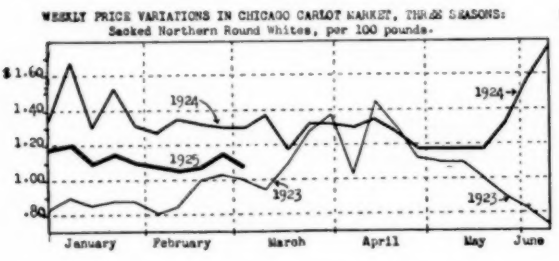
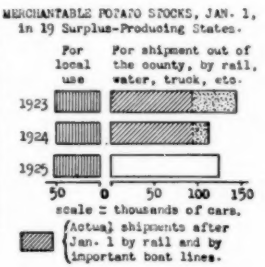
MID-WINTER POTATO HOLDINGS LIBERAL

(Contribution from the Fruit and Vegetable Division, Bureau of Agricultural Economics, U. S. Department of Agriculture.)

Apparently there are sufficient old potatoes on hand to meet all requirements. Official estimates as of January 1 show 105,701,000 bushels of merchantable stock remaining in the 19 surplus-producing late potato states, compared with 98,252,000 the year before and 118,151,000 bushels on January 1, 1923. Both this year and last the January holdings were about 34 per cent of the total production in this group of states, as against 36 per cent in 1923. In addition, some twenty million bushels of merchantable potatoes remained in the 16 "deficient" main-crop states. This means that total January 1 holdings were 15,763,000 bushels more than in 1924, but about 7,000,000 less than remained from the record-breaking crop of 1922.





In recent seasons, approximately 30 per cent of the January stocks in the 19 important states was considered necessary for local use. Such a quantity this season would be around 32,000,000 bushels, or 52,850 carloads, thus leaving more than 123,000 carloads available for shipment out of the county where grown, whether moved by rail, boat or truck. During the last two seasons, actual shipments reported to the U. S. Department of Agriculture after January 1 averaged about 94,000 cars. Thus it is evident that, of the 145,000 carloads available for shipment out of the county on January 1, 1923, more than 51,000 either moved by truck and small boats or were left on the farms. The corresponding quantity last season was less than 17,000 carloads.

The effect of the present large holdings on wholesale prices is problematical. Though January stocks two years ago were heavier, prices actually advanced in March and April, chiefly because of the light crop of early potatoes in the South, but closing quotations in June, 1923, were very low—only 75 cents per 100 pounds in the Chicago carlot market. The relatively light holdings last spring were reflected in price levels somewhat higher and much steadier than during early 1923, and final June sales in Chicago advanced sharply to $1.75, even though new potatoes were plentiful. Chicago carlot prices since January 1, 1925, have averaged

about $1.10, or midway between the ranges of the same period in 1923 and 1924.

Eastern Markets Weak

At the end of February, eastern jobbing markets and shipping points were weak, but the western situation was brighter. Cash prices to growers in Colorado ranged from 90 cents to $1.25 per 100 pounds, and these potatoes sold in Texas carlot markets at $1.90-$2.00. Latest f. o. b. quotations on sacked Ohios at Red River Valley points averaged $1.15, with Minnesota white varieties firm in the sandland district at 90-95 cents. Carlot sales of Red River Ohios were made in Kansas City at $1.55-$1.60, the Cincinnati jobbing price reaching $1.65-$1.90. Idaho potatoes weakened slightly; Russets (California pack) brought only $1.40, and Rurals for eastern shipment were $1.00. Chicago and St. Louis dealers both got $2.50 for best Russets. Idaho Rurals ranged $2.15-$2.25 in Texas consuming centers.

Closing city quotations on sacked New York round whites were anywhere from $1.00 to $1.45, with bulk stock 85 cents to $1.25. Green Mountains from Long Island sold at $1.80-$1.90 bulk per 100 pounds in New York City, but the same variety from Maine brought only $1.40-$1.50. Maine stock, sacked locally in Boston, was ranging $1.20-$1.25; elsewhere the price was $1.25-$1.60. Aroostook County points were dull, the f.o.b. figure on bulk Green Mountains having declined to 60 cents. Trading of sacked round whites also was slow in western New York at 90 cents-95 cents, and the few quotations obtainable from North Central shipping points averaged about 85 per cent. During the early part of February, carlot shipments of old potatoes were much heavier than during the corresponding period in 1924. By the end of the month, however, this situation was sharply reversed thereby making the total February movement both seasons about 20,000 cars.

New Potatoes were arriving from Florida, Cuba and Bermuda. Florida Spaulding Rose, in double-head barrels, brought mostly $13-$14 in New York City and $15-$16.50 in Pittsburgh and Chicago. Combined area planted or to be planted in six important southern states was 156,450 acres, or 15 per cent less than last year. The decrease in Alabama and the Eastern Shore of Virginia was expected to be 10 per cent, in South Carolina about 20 per cent, in Florida 25 per cent, and in North Carolina possibly 33 per cent.

AN ECONOMIC STUDY OF THE MARKETING OF NEW YORK STATE POTATOES

M. P. Rasmussen

Assistant Professor of Marketing — Cornell University

The margins taken by various middlemen in all branches of marketing have been much discussed. A great deal of this dis-

cussion had been without a clear understanding either of the size of the margin or of the services rendered in return. One of the purposes of this study was to find out the facts in the hope of establishing a fair conception of the necessary costs and services involved in the handling of potatoes at country shipping points and in transporting them to terminal markets.

Studies of several thousand farm businesses in New York have shown that certain farmers are able to raise a bushel of potatoes or a can of milk with less labor and at less cost than others. Farm management studies have analyzed the business methods and practices that have made these differences possible. The results of such studies have enabled farmers to learn the strong and the weak points of their business and to strengthen the points in which others have worked out better methods. It was assumed that as great variations in efficiency prevailed in the marketing of farm products. Therefore in this study the effort was made to learn some of the factors which affect efficiency in the marketing of potatoes.

Most of the agencies now handling potatoes at country points have had to learn the facts by costly experience. A study of representative potato marketing agencies should serve as a guide to any organization, farmer-owned, or other, which seeks to engage in this field of work, or being already engaged, which seeks to make its operation more efficient.

Detailed records were obtained by going to private potato marketing agencies and farmers' cooperative potato marketing organizations at country points in western and northern New York. For the 1921-22 season, these data covered approximately 3½ millions of bushels of potatoes and for the 1922-23 season, approximately 2¾ millions of bushels.

Costs and Margins

The average gross wholesale price per 600-bushel carload of potatoes delivered in railroad yards at primary destinations for all agencies studied during the 1921-22 season amounted to $762.53. Freight charges amounted to $107.13 or 14.05 per cent and $11.05, or 1.45 per cent was returned as claims and allowances for one reason or another. The grower received on the average $566.73 or 74.32 per cent and the operating costs at the country shipping point averaged $86.57 or 11.35 per cent. The dealers or associations handling potatoes at country points averaged to make a loss of $8.95 per carload or 1.17 per cent of the gross sale price.

Potatoes were more plentiful during the 1922-23 season and the gross wholesale price for the thirty-four agencies averaged $521.58 per carload of 600 bushels, delivered in railroad yards at primary destinations as compared with $762.53 for the previous year. Freight charges amounted to $98.89 per carload or 18.96 per cent of gross sales; and $7.29 or 1.4 per cent was returned

as claims and allowances. On the average, the growers received $322.73 or 61.87 per cent of the gross sales price, and the operating costs at the country shipping points averaged $93.67 or 17.96 per cent. The dealers or associations handling potatoes at the country shipping points averaged to make a loss of $2.20 per carload or 0.19 per cent of the gross sales price.

Farmer's Share of Consumer's Dollar.

The data in this study cover only wholesale buying prices at the city point and no data are available to indicate the average retail price of these potatoes. An approximation may be obtained, however, by the use of data published by the Bureau of Agricultural Economics, United States Department of Agriculture, giving analyses of the retail prices of potatoes in three large terminal markets. If conditions in the markets receiving New York potatoes were similar to those in Boston and Pittsburgh, then the operating growers' portion, and freight discussed heretofore represent approximately 54 to 58 per cent of the average retail selling price. This means that New York growers got approximately 35 to 36 per cent of the retail price of potatoes during the 1922-23 season. From 42 to 50.1 per cent of the retail price of potatoes was absorbed by distribution costs after the potatoes reached the city. Unpublished data gathered cooperatively by the Port of New York Authority and the Bureau of Agricultural Economics, United States Department of Agriculture, for the period February 2, 1923 to October 26, 1923, indicate that the average wholesale margin in New York City was approximately 5 per cent, the jobbers' margin 5 per cent, and the retail margin approximately 35 per cent of the consumers' dollar. These percentages represent gross margins and not profits.

Operating Costs and Returns

During the 1921-22 season, records were obtained from seven farmers' cooperative associations, eight single-station dealers, and nine dealers who loaded at many stations; during the 1922-23 season, twelve cooperatives, ten single-station dealers, and twelve many-station dealers records were included.

Season 1921-22

The two items of great interest were the total operating costs and the amounts paid the grower. Producer and consumer alike were interested in having potatoes handled at the lowest cost possible at country shipping points. The averages indicate that the single-station dealers handled potatoes at the lowest cost during the 1921-22 season, $72.63 per 600-bushel carload. Cooperatives ranked second with an average cost $80.79 per carload and the many-station dealers had the highest handling cost, $89.68 per carload. (Table 1.)

TABLE 1. GROUP OPERATING COSTS AND RETURNS PER 600-BUSHEL CARLOAD, OF UPSTATE NEW YORK POTATOES, 24 SHIPPING AGENCIES SEASON 1921-22

	7 farmers' cooperative associations	Average of 8 single station dealers	9 many station dealers	24 shipping agencies
Labor and management	$ 27.92	$ 26.75	$ 29.05	$ 28.64
Warehouse costs	6.07	4.28	6.55	6.22
Equip. costs	1.09	.68	1.10	1.05
General office costs	7.26	8.68	8.47	8.35
Telephone and telegraph	1.36	1.89	3.52	3.07
Bank exchange	1.11	.79	1.19	1.13
Brokerage and commission	11.46	16.30	7.37	8.93
Linings	1.91	2.10	2.03	2.02
Sacks, tags and twine	19.37	3.65	23.33	19.74
Miscellaneous	3.24	7.51	8.07	7.42
Total op. costs	80.79	72.63	89.68	86.57
Paid grower	552.06	567.24	568.97	566.73
Total cost of potatoes to shipper	632.85	639.87	658.65	653.30
Gross sales	747.93	767.52	764.07	762.53
Claims and allowances	9.55	11.06	11.30	11.05
Freight	94.01	124.84	106.42	107.13
Net sales	644.37	631.62	646.35	644.35
Net profit	11.52	.....	.....	.....
Net loss	.....	8.25	12.30	8.95

The grower while interested in having his potatoes handled at a low cost, was primarily concerned with the price which he received for them. On the basis of returns to the grower the many-station dealers held first rank, with an average price paid to the grower of $568.97 per 600-bushel carload, or $0.948 per bushel. The single-station dealers ranked second with $567.24 per carload or an average price to the farmer of $0.945 per bushel. The cooperatives paid the grower an average of $552.06 per carload and had an average profit of $11.52 per carload which might have been paid out to the growers as patronage dividends. Excluding the possible dividends, several of which were paid, the average return to the grower by the cooperatives was approximately $0.92 per bushel; with the possible dividend added, the average price paid grower would have been approximately $0.94 per bushel.

If the amount of claims and allowances per carload may be taken as a criterion, the cooperatives loaded their cars most carefully. The cooperatives held claims for allowances down to $9.55 per carload, while the claims for single-station dealers averages 11.06, and for many-station dealers, $11.30.

In view of their operation costs and actual net sales, both the single-station dealers and the many-station dealers appear to have overpaid the grower by from 1.37 cents to 1.72 cents per bushel during the 1921-22 season. This figure may seem relatively insignificant when expressed on the bushel basis. Such an overpayment actually resulted in net losses to one many-station dealer of $13,639.70.

TABLE 2. GROUP OPERATING COSTS AND RETURNS PER 600-BUSHEL CARLOAD OF UPSTATE NEW YORK POTATOES, 34 SHIPPING AGENCIES SEASON 1922-23

	Average of			
	12 farmers' cooperative associations	10 single station dealers	12 many station dealers	34 western & northern N. Y. shipping agencies
Labor and management	$ 26.79	$ 29.50	$ 27.99	$ 28.00
Warehouse costs	7.59	5.71	6.28	6.42
Equipment costs	1.82	.86	1.22	1.27
General office costs	10.83	12.06	9.81	10.27
Telephone and telegraph	1.27	1.91	3.22	2.72
Bank exchange	.71	1.28	.80	.84
Brokerage and commission	15.94	24.58	7.90	11.40
Linings	1.94	2.80	1.95	2.06
Sacks, tags and twine	26.15	11.47	24.13	22.84
Miscellaneous	7.49	9.67	7.60	7.85
Total op. costs	100.53	99.84	90.90	93.67
Paid grower	317.01	337.28	321.44	322.73
Total cost of potatoes to shipper	417.54	437.12	412.34	416.41
Gross sales	546.66	564.44	512.50	521.58
Claims and allowances	9.59	6.20	6.94	7.29
Freight	101.52	110.45	96.14	98.89
Net sales	415.55	447.79	409.60	415.40
Net profit	.....	10.67	.....	.....
Net loss	1.99	.....	2.74	1.01

Season 1922-23.

The averages indicate that the many-station dealers handled potatoes at the lowest cost during the 1922-23 season, $90.90 per carload. The single-station dealers had the next lowest cost, $99.84 per carload, and the cooperatives had the highest cost $100.53 per carload. The single-station dealers and the cooperatives were about equally efficient in costs since the cost varied only $0.69 per carload. The many-station dealers were, on the average, about 10 per cent more efficient on the costs during the 1922-23 season than the other types of agencies.

The situation was different, however, when viewed from the point of returns to the grower. The single-station dealers on the average, paid growers $337.28 per carload or about $0.562 per bushel; the many-station dealers paid the next highest returns, $321.44 per carload or $0.535 per bushel; and the cooperatives paid the growers the least, $317.01 per carload or $0.528 per bushel.

If the amount of claims and allowances per carload may be taken as a criterion, the single-station dealers loaded their cars most carefully during the 1922-23 season. The single-station dealers held claims for allowances down to $6.20 per carload, as compared with $6.94 per carload on the part of the many-station dealers and $9.59 per carload on the part of the cooperatives.

The single-station dealers were, on the average, the best salesmen with net sales per carload of $447.79 even after paying $110.45 freight. The cooperatives had the next highest net sales, $415.55 per carload, and the many-station dealers were the lowest with $409.60. The cooperatives and the many-station dealers apparently overpaid the growers since they experienced losses, respectively, of $1.99 and $2.74 per carload on the average.

Conclusions

It would be difficult to state which of these three agencies performed the necessary services incident to receiving and shipping potatoes most efficiently and economically. Each of these three types of agencies had outstanding individual representatives who operated very efficiently; each likewise had inefficient representatives. The type of agency is probably not the most important factor. The primary concern is that the agency, whatever type it may be, shall follow good business principles and be efficiently managed. This seems as likely to occur in one type of agency as another. It is probable that these three types of agencies supplement one another very well and provide the kind of competition necessary to call forth the best efforts for efficiency and economy.

What Can Be Done

Comparatively little if anything can be accomplished by the individual shipper or organization in bringing about reductions in freight rates. Increased returns to the grower will probably have to come about in one or more of three ways:

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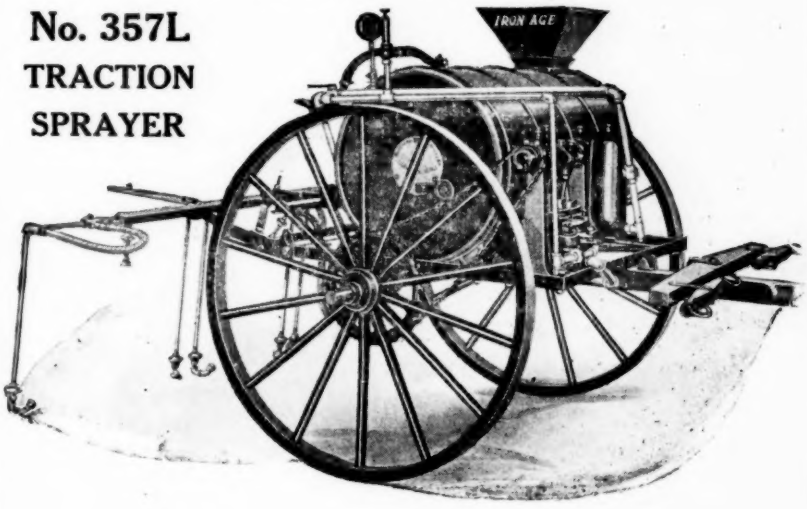

As shown here it is equipped with the celebrated twelve-nozzle Drop Bar for spraying four rows. This mey be replaced with the regular eight-row Bar.

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1. Through increasing the gross sales price.
2. Through decreasing operating costs at the country shipping point.
3. Through decreasing loss from avoidable claims for allowances and deductions.

Something may possibly be done within rather narrow limits in the way of increasing sales prices in terminal markets through better knowledge of the trade, advertising and in other ways. The keen competition between producing areas will not ordinarily permit of great variation in this respect, however.

Operating costs per carload of 600 bushels varied from $51.76 to $156.32. This may indicate that some economies can be brought about at the country shipping point.

The average claims and allowances for the various agencies ranged from $0.29 to $36.35 per carload. Some of these claims may be unavoidable, especially those due to severe drops in temperature or to a sharp decline in the market price. Some of the claims are avoidable, such as those due to careless grading, indifferent lining of car insufficient heating of cars, and selling to unknown or unreliable firms. More careful attention to this phase of the potato business would seem to offer fair promise.

The most promising means for increasing the gross sales price for upstate New York potatoes probably lies in the standardization of varieties. This is distinctly a growers' problem. One of the shipping agencies reported that the potatoes shipped during the 1921-22 season were about as follows:

30 per cent blue sprouts
30 per cent white sprouts
30 per cent russets
10 per cent Spaulding Rose.

All of these except the Spaulding Rose, a red variety, were mixed together and some of the red potatoes were occasionally mixed in.

At least two of the areas with which upstate New York competes, Maine and Long Island, produce a highly standardized product. There is often a marked differential between the price paid per bushel for Maine or Long Island potatoes and that paid for upstate New York in the New York City market. Probably not all of this differential may be ascribed to standardization of variety. Some is undoubtedly due to better quality. The expressed opinion of the trade, however, leaves little doubt that lack of standardization is a heavy handicap encountered by upstate New York potatoes.

A number of the cooperating agencies were emphatic in stating that the trade discriminated against dark-skinned varieties of potatoes such as russets. The objections to the russet type of potato were that they did not sell well in the table-stock market and were difficult to grade.

Accounting is one of the weak features of the potato shipping business. Few of the agencies studied were an exception to this rule. Many of these agencies do not make adequate allowances for depreciation of warehouses and equipment. Many of them go through the form of collecting what is called a reserve fund and then use the reserve fund for current expenses. It is particularly desirable that adequate reserves for depreciation and possible losses be built up to meet unfavorable situations. It is only fair to state that many of the shipping agencies realize the weakness of their accounting systems and invite suggestions for improvement. Several of them have spent large sums of money for accounting systems which have not proven satisfactory.

Dealers and cooperatives alike are often asked to extend loans to growers on potatoes as yet unharvested or stored in growers' cellars. Growers who ask loans of shipping agencies should recognize the fact that the shipping agency is not a bank and is not adapted to carrying on the credit function. The place to borrow money is from a bank and not from a cooperative association or private dealer. The business of all shipping agencies is to handle and ship potatoes. The business of a bank is to sell credit. It is as logical to ask a bank to handle and ship potatoes as it is to ask a cooperative or a private dealer to extend credit. If cooperatives or dealers are obliged to extend credit, they frequently have to borrow the necessary funds from a bank at the current rate of interest. Since there is always some risk in loaning money, the cooperatives or dealers, to be safe, have to charge more than the current rate of interest to avoid loss.

It is easy to make mistakes in any business and the potato-shipping business is no exception. Occasionally a cooperative or a dealer starts in business with very meager knowledge of the local situation. No cooperative in New York State has as yet handled 100 per cent of the potatoes shipped from any station, so far as available data show. The same is probably true of dealers. The manager of a prominent cooperative organization gives the sound advice that it is better to rent for awhile until warehouse needs are better known. At any rate, it would seem to be a good policy to ascertain the number of carloads of potatoes shipped from the local station over a period of years, and then estimate conservatively the number of carloads the shipping agency can hope to handle before purchasing or building a warehouse. If less than 30 to 50 carloads are to be handled annually, it is doubtful whether a warehouse can be justified. In such a situation, car-door loading will probably work out most advantageously.

A small number of the shipping agencies use their warehouses throughout the year. Many of them do not. During the winter potatoes are hauled at very irregular intervals. There is much idle space and labor in warehouses, winter and summer. Some of the shipping agencies are now handling feed, fertilizer, lime, seed, and a variety of the agricultural products of their region; others

are carrying on a very restricted business with only a few commodities. It is probable that the handling of some of the above named farm supplies as well as most of the farm products raised in the region which may be shipped in carloads, would aid in reducing overhead expenses. Several shipping agencies are interested in such a program but are apprehensive of becoming involved in the extension of a great deal of credit to farmers. It is possible that the use of trade acceptances may prove helpful in solving this problem. Trade acceptances are widely used in the larger centers of trade, but have not as yet been used generally in rural districts. A feed store in southern New York seems to be using them successfully. By this method, the farmer pays for his own credit and knows what he is paying for. The feed store gives acceptances only to farmers whose credit is good and has all its capital available for running its business. Bankers understand trade acceptances and will probably be willing to assist shipping agencies in their use.

POTATO SEED TREATMENT IN WISCONSIN

R. E. Vaughan, Univ. of Wisconsin, Madison, Wis.

The treating of seed potatoes with corrosive sublimate is an accepted practice among the better and larger potato growers of Wisconsin. Mr. Brann, field inspector for certified seed, states that 90 per cent of the applicants for certification in 1924 treated their seed. In the newer northern potato centers seed treatment is more generally practiced than in the older central sections.

The community idea of treatment has received more favorable support in Portage County, in the heart of the older central section, than elsewhere. Mr. Noble, the county agent, reports that about 400 farmers treated 20,000 bushels in 8 community tanks in 1924. This is somewhat less than in 1923 when 23,000 bushels were treated by 500 farmers in 5 tanks. Mr. Noble suggests that the reason for the slump in 1924 was the use of reasonably clean seed, and because of the unusually late spring the farmers thought they didn't have time to treat. In 1922, the first year of community tank effort by Mr. Noble, 8,000 bushels were treated by 150 farmers in 3 tanks. The results of treating either in community tanks or at home have been very satisfactory and most farmers realize that it is a paying proposition.

Mr. Duffy, county agent of Barron County, estimates that from 100 to 150 men in his county treated their potatoes in 1924. This means from 7,000 to 11,000 bushels. In his community tank at Angus there were 245 bushels treated one day between 10 A. M. and 5 P. M. About 800 bushels were treated in this tank by 8 neighbors.

Mr. J. G. Jardine, President of The A. M. Penny Company, Waupaca, reports that 60 farmers treated 2,800 bushels, while about 20

farmers treated 1,000 bushels with the Central Wisconsin Seed Company at Waupaca. It is of particular interest to note this treatment of nearly 4,000 bushels at Waupaca because there is no agent in that county to advertise and push the work. Mr. Jardine writes: "We have had good reports from a great many of those who had their seed treated and have not had any adverse reports."

You will be interested in the following letter from Mr. Herman Leuman, a farmer of Coleman, Marinette County, Wisconsin. "In regard to treating seed potatoes, will say that I find it a very important thing for the farmers to do, as when the potatoes come up they come nice and even and big tops. Some men ask me, 'What did you do with your potatoes, as they are so even in tops?' and I told them I treated them with corrosive sublimate, and in the fall when we dug them they were nice and smooth—no scab or scurf on them. We treated our potatoes about three weeks before planting. We use a cement tank in which treatment is done. It takes about one day's work to treat enough for my seed. If all the farmers will treat their seed I am sure that we will have better potatoes and better prices on the market."

The cost of treating potatoes in Wisconsin varies from three to five cents a bushel, depending on the ownership of the tanks and the quantity and time of purchase of the corrosive sublimate. Practically all the chemical used for the 24,000 bushels treated in Portage and Waupaca counties was purchased by one man, a druggist at Amherst, who also operates the Amherst community treating tank.

Inasmuch as corrosive sublimate seed treatment has been giving such good results and receiving such widespread support from farmers, county agents, and commercial interests, it is, in our judgment, unwise for us to advocate any general change to hot formaldehyde treatment at this time. A number of our correspondents have tried hot formaldehyde and report considerable difficulty in obtaining and maintaining the required temperature which more than offsets the shorter time actual time of treatment in the hot solution.

DATA COMPILED FROM MARKET NEWS SERVICE REPORTS AND QUESTIONAIRES TO THE VARIOUS POTATO SPECIALISTS IN THE STATES

E. A. Stokdyk, Specialist in Marketing

The following tables may be used as a guide by growers and shippers in studying Market News Service Reports.

EARLY POTATO SHIPMENTS IN CARLOADS

3-year average

1922-1924

State	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.
California	419	192	149	760	960	738	806	733
Florida	122	1633	2433	120	1			
Texas		127	513	568				
Alabama		3	940	1122	9			
Georgia			218	230	20			
Louisiana			517	536	44	3		
Mississippi			47	105	5			
S. Carolina			2229	2352	28			
N. Carolina			83	3893	620	88		
Arkansas				286	35			
Oklahoma				907	170			
Virginia				5808	11161	1555	233	75
Kansas				32	1905	1475	150	26
Kentucky				7	400	510	105	7
Delaware				3	36	19	3	
Missouri				3	338	341	84	11
Tennessee				79	11			
Maryland					1920	492	38	24
Colorado					163	833	2081	1920
Idaho					76	1282	1408	1710
Illinois					51	95	18	7
Nebraska					23	342	482	632
New Jersey					787	5478	3366	944
N. Y. Long Island					60	1033	1531	1614
Utah					88	458	293	201
Iowa						48	88	270
Minnesota						1268	4317	7879
Maine						200	2834	4934
Michigan						55	1245	2436
Oregon						224	63	61
Pennsylvania						53	481	918
N. Dakota						11	1050	2967
Wisconsin						132	1147	2855
S. Dakota						7	657	1665
Montana						5	30	232
Total Early	541	1955	7129	16811	18911	16745	22510	32121
Total late and early in market	23243	20903	18437	21102	19521	17095	23276	34711

"NEWBRUNSWICKER" BRAND SEED POTATOES

All our offerings are grown from specially selected seed and have Canadian Government or Maine State Certificate as to purity, type and freedom from disease. In addition every package carrying our tag and brand is guaranteed by us to be from a crop showing less than one per cent total diseases.

We specialize on "McCain strain Green Mountain" and "Palmer strain Irish Cobblers".

Among our customers to whom we invite reference are: W. R. Christie and M. C. Smith, Presque Isle, Maine; The O. K. Storey Co., Washburn, Maine; Apothecary Halls Co., Waterbury, Conn.; Monmouth County Farmers Exchange, Freehold, N. J.; Nassau Seed Co., Hicksville; French and Patterson, Port Jefferson and Max Bobinski, Riverhead, Long Island, N. Y.

We also offer Bliss Triumph seed of exceptional vigor, and excellent type yielding with us over 300 bushels per acre, containing less than one per cent total diseases except Mosaic.

No expense is spared in thoroughly roguing our fields, removing as far as humanly possible all plants that show any signs of disease or lacking in vigor. Such plants, both stalks and tubers, are entirely removed from the field by our system of covered receptacles to prevent the passing of aphids and insects from diseased to healthy plants.

Address all correspondence to

New Brunswick Brokers, Ltd.

FREDERICTON, NEW BRUNSWICK
CANADA

F. de L. Clements,
President and Manager.

EARLY POTATO SECTIONS SHIPPING CARLOTS

State	District	Date of first shipments	Date of last shipments	Period of heaviest movement
California	San Diego	Mar. 1	May 1	Mar. 15-Apr. 15
Florida	Moore Haven	Mar. 5	May 15	Apr. 20-May 15
	Hastings Elkton East Palatka S. Jacksonville	Mar. 20	July 20	Apr. 20-May 30
California	Colma	Apr. 1	June 15	Apr. 10-May 30
Texas	Brownsville San Benito	Apr. 15	May 15	Apr. 20-May 10
	Wharton Eagle Lake	Apr. 20	June 20	Apr. 25-June 1
S. Carolina	Meggett Charleston	May 1	June 15	May 10-June 1
Georgia	Meinhard	May 1	June 15	May 10-June 1
Alabama	Atmore	May 1	July 31	May 15-June 15
Mississippi	Lucedale	May 1	June 15	May 10-June 1
Louisiana	Alexandria Lockport New Orleans	May 1	June 15	May 10-June 1
N. Carolina	Beaufort Washington Elizabeth City	May 1	June 15	May 20-July 10
Arkansas	Fort Smith	June 1	Aug. 20	June 10-July 10
Oklahoma	Fort Gibson	June 1	July 15	June 10-July 10
Virginia	Norfolk Onley	June 1	Sept. 1	June 10-July 30
California	Shafter	June 15	July 20	June 15-July 10
Maryland	Pocomoke City Hursley	June 15	Sept. 1	June 20-Aug. 15
Kentucky	St Mathews Louisville	June 25	Sept. 30	July 1-Aug. 10
Kansas	Topeka Lawrence Kansas City	July 1	Sept. 30	July 10-Aug. 10
Missouri	Orrick	July 1	Sept. 30	July 10-Aug. 10
Utah	Weber-Davis	July 1	Sept. 20	July 10-Aug. 20
New Jersey	Woodstown Freehold Hightstown Salem Daretown	July 1	Sept. 20	July 15-Sept. 15
New York	Riverhead Long Island	July 15	Sept. 30	July 20-Sept. 30
California	Los Angeles	July 15	Sept. 1	July 15-Sept. 1
Nebraska	Kearney	July 15	Oct. 10	Aug. 1-Sept. 1
Illinois	Madison St. Clair	July 5	Sept. 1	July 15-Aug. 15
Delaware	Hursley	July 15	Aug. 20	July 20-Aug. 10
Idaho	Caldwell	July 25	Sept. 30	Aug. 5-Sept. 30
Colorado	Grand Junction Fruita	July 10	Sept. 30	Aug. 1-Sept. 15
Oregon	Malheur	Aug. 10	Sept. 15	Aug. 10-Sept 1
Washington	Walla Walla	July 1	Sept. 1	July 10-Aug. 10
Colorado	Delta	Aug. 15	Oct. 1	Aug. 20-Sept. 15
Colorado	Fort Morgan	July 20	Aug. 30	July 20-Aug. 1

CONTROL OF POTATO SCAB

M. F. Barrus

In a Farmers' Week address given at the New York State College of Agriculture on February 11, 1925, Dr. W. H. Martin, plant pathologist at the New Jersey Agricultural Experiment Station, told his audience how to control the common scab of potatoes.

Seed treatment, he said, should not be neglected as it will aid in keeping the scab organism out of the uninfested soil and give a better stand in the field, thus increasing the yield as experiments have confirmed. He advised growers not to use scab infested soil if they can possibly avoid it for if such is used seed treatment will not aid in controlling the disease.

Scab is caused by a bacterial soil organism, he said, and this organism is favored in its development by dry soil conditions, particularly an alkaline soil. For this reason one should avoid the application of manure, lime, or even of nitrate of soda to the potato field. The continued use of nitrate of soda tends to make the soil alkaline and thus favorable for the development of scab.

The use of rye or other cover crops tends to make the soil acid and thus unfavorable for scab. Often such a practice will enable one to grow scab free potatoes if alkaline substances are not applied to such soils. The use of ammonium sulfate in place of nitrate of soda for at least a part of the nitrogen requirement of the fertilizer, will aid materially in keeping the scab under control. However, these may not suffice for fields already badly infested with the scab organism. If such fields must be used, the amount of scab can be materially reduced by applying sulfur flour to the soil with a grain drill or lime distributor in the spring before planing. This should be applied after the ground is plowed and then thoroughly worked into the soil with a harrow. It should not be applied in the row with the fertilizer. In New Jersey, the amount of sulfur used varies from 300 to 600 pounds per acre. When scab is only slightly troublesome the smaller quantity may be used while the maximum is applied in badly infested soil, and even this may be reduced if ammonimum sulfate is used in the fertilizer.

Inoculated sulfur, Dr. Martin said, has given better results in New Jersey than uninoculated sulfur. This is finely ground sulfur flour to which a sulfofying bacterium has been added. This bacterium is able to oxidize the sulfur when applied to the soil more rapidly than if this process depended upon these organisms naturally present in the soil.

The use of sulfur tends to make the soil acid and therefore, care should be taken that only enough be applied to bring about the control of scab. If used in large quantities or applied year after year to the same land, the soil may become too acid to grow

crops profitably. Because the potato will tolerate an acid soil better than some other crops, growers practicing a rotation should avoid using sulfur if possible.

The speaker said that some varieties of potatoes are much more subject to scab than others. The American Giant is particularly resistant but because of its poor quality, acreage is decreasing in New Jersey. The Russet and Smooth Rural varieties do not scab as badly as Green Mountains which are very susceptible, as are also Irish Cobblers.

VASCULAR DISCOLORATION IN TUBERS FROM VINES KILLED BY FROST

J. W. Eastham

A somewhat perplexing trouble occurred in the fall of 1923 in potatoes grown for certification in the Courtenay district. Certain fields of burbanks which were still green when frost came in the last week of September, were cut down by the frost and the tubers subsequently developed a brown discoloration in the vascular ring. Potatoes of the same variety dug previous to the frost and those which escaped it, did not develop this discoloration. The brown threads were strictly confined to the vascular ring, not passing into the pith or the cortex (starch ring). In many cases it extended from end to end of the tubers and while in most cases is was faint, in others it was pronounced enough to make a purchaser perhaps suspect "wilt". No wilt, however, had been found in the growing crop inspections nor was the extent of the brown tissue such as is usually found associated with wilt diseases. Under the circumstances, however, it was thought best to refuse certification, for fear of possible complications with purchasers, until the matter had been further investigated. Cultures were made in the laboratory from the discolored parts of the tubers but no organisms were found in them as is the case in wilts and similar diseases. Samples of the affected potatoes were planted at the Dominion Experimental Farm at Invermere and at the University Farm at Point Grey. The plants raised from this seed were healthy and vigorous, showing no evidence of any weakness or disease. Those at Invermere, however, were again cut down by frost and the trouble recurred in the tubers. In the Point Grey plot, which was not frosted, the tubers were clean and sound with no evidence whatever of this brown streak.

It seems possible that this discoloration is a physical one resulting from some coloring matter from the killed and decomposing leaves being carried down to the tubers and staining the sap channels. From the work carried out last year it would appear that such potatoes are quite satisfactory for seed purposes.

THE RESPIRATION OF POTATOES IN STORAGE

Freeman Weiss

Exact knowledge of the basis for successful storage of potatoes has been advanced by two papers dealing with the respiration of tubers at temperatures down to freezing (32° F.), (0° C.), the range from about 50° F. to 32° F., (10° C. to 0° C.), not having been previously studied. In the first, Hopkins [1] has made periodic determinations of the actual output of carbon dioxide under normal storage conditions, together with observations on the amount and kind of sugar present, the water content and the sap reaction. The most interesting feature of his work is the discovery that whereas the Van't Hoff temperature coefficient applies to the respiration of potato tubers from about 11.5° C. to 3.0° C., (52.7° F. to 37.4° F.), from this point down to freezing there is accelerated respiratory activity such that at 0° C., (32° F.) the output of CO_2 is greater than at 4.5° C., (40.1° F.). Below 0° C., (32° F.), there is again a decline. The sugar content is nearly constant at 4.5° C., (40.1° F.), but accumulation begins when the temperature falls below 3° C., (37.4° F.), and is increasingly rapid down to 0° C., (32° F.). The changes in amounts of total and reducing sugars are parallel, except below freezing, when sucrose accumulates as reducing sugars disappear. The existence of a minimum respiratory rate at 3° C, (37.4° F.), followed by an increase to 0° C., (32° F.), when a second decline sets in, is explainable if respiration in potato tubers in this temperature range is influenced more by the concentration of sugar than by the temperature, and if there is an optimum concentration of sugar for the activity of respiratory enzymes, higher concentrations inhibiting activity.

A practical application of these findings is made in Marble's [2] recommendations for storage of potatoes, previously published in this Journal (Potato News Bul. 1: 245-247; 1924) which include among other directions the adoption of a storage temperature of 38° F., (3.35° C.). Other conditions being equal shrinkage is least and maintenance of quality best at this point.

Bennet and Bartholomew [3] have studied respiration under the abnormal conditions which induce blackheart, namely restricted oxygen supply and high temperature. However, with prolonged exposure blackheart may be produced at ordinary temperatures and even those obtaining in storage, the condition resulting primarily from oxygen depletion and the initiation of anaerobic conditions in the internal tissues of the tuber. These authors likewise report a minimum rate of carbon dioxide production at about 5° C., (41° F.), (their temperature differences not being as small between different experiments as Hopkins') followed by an increase down to freezing such that the rate is then nearly as high as at 10° C., (50° F.). They state that the Van't Hoff temperature coefficient applies to respiration of potato tubers between

45° C., (113° F.) and 5° C., (41° F.), and the minimum at 5° C., (41° F.), is the "result of an equilibrium between the decreasing effect of a lower temperature, and the increasing effect of an increased sugar content....."

Concomitantly, the period of exposure necessary to induce blackheart, with the same ratio of oxygen to carbon dioxide in the atmosphere, increases about twice for each fall of 10° C. from 45° C. to 5° C., (or 18° F. from 113° F. to 41° F.), but then decreases down to 0° C., (32° F.). The maximum exposure to an atmosphere devoid of oxygen before injury occurred was 42° days at 5° C., (41° F.).

It was observed also that the Netted Gem was less susceptible to injury than Rural New Yorker or Green Mountain, requiring exposure to an oxygen-free atmosphere between 20° C., (48° F.), to 30° C., (86° F.), before blackheart developed, whereas Rurals and Mountains were injured before oxygen depletion was complete. The difference is thought to be associated with differences in the permeability of the skin.

A diffuse type of blackheart resulted from confinement at 15° C., (59° F.), or below, but typical internal blackheart occurred above this temperature. Utilization of oxygen accumulated in the tissues was only about half as rapid as that of atmospheric oxygen. Tubers which have become "sweetened" by exposure to low temperature are more readily injured by subsequent high temperature than non-sweet ones.

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1. HOPKINS, E. F.—Relation of low temperatures to respiration and carbohydrate changes in potato tubers.—*Bot. Gaz.* 78: *311-325. 1924.*

2. MARBLE, L. M.—Ventilated storage for potatoes.—*Fifth Rep. The Marble Lab., Inc., 1924: 3-5.*

3. BENNET, J. P. AND E. T. BARTHOLOMEW.—The respiration of potato tubers in relation to the occurrence of blackheart.—*Univ. California Agr. Exp. Sta. Tech. Paper 14. 35p. illus. 1924.*

POTATOES CHEAP AT SIX CENTS

E. A. Stokdyk

Eat Another Potato Instead of a Slice of Bread

In these days of high bread and flour prices the economical housewife is turning to other sources of supply for energy. Potatoes furnish this supply and furnish it very cheaply. Up to six cents a pound potatoes are classed among the cheaper foods and even up to eight cents a pound are considered as medium priced foods. At the present time potatoes can be bought for 2 or 3 cents per pound in the retail market. With this in mind we can realize the bargain we are getting in food supply by eating potatoes.

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STATE INSPECTION SEED

VARIETIES for SALE—TRIUMPH, GREEN MOUNTAIN, RURAL NEW YORKER, IRISH COBBLER, AND EARLY OHIO.

This year's Wisconsin crop of certified seed is 50% less than last year. The Wisconsin Certified Seed Potato Co-Operative Association will handle 75% of the 1924 Wisconsin certified seed potato crop. Place your order now if you want WISCONSIN CERTIFIED SEED POTATOES to plant in 1925.

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NOW IS THE TIME TO INSURE YOUR 1925 POTATO CROP AGAINST BUGS AND BLIGHT. Don't risk losing your 1925 PROFITS. THE BEST WAY to save them is to spray thoroughly and the best way to Spray is with a **"Friend".** WHY throw away your profits to bugs and blight when it's so easy to save them with a "Friend"?

The "Friend" traction potato sprayer was the first satisfactory high pressure traction outfit made and there are now hundreds of delighted and satisfied users. "Friend" traction sprayers have direct pump drive, no grinding gears or snapping cracking chains, no sprockets. "Friend" high pressure plunger pump. A traction sprayer that is different and wherein it's different it's better. "Friend" gasoline power potato sprayers are unequaled for adaptability and service. Write today for complete information.

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YOU'LL ALWAYS BE GLAD YOU BOUGHT A "FRIEND"

Eating more potatoes will not only cut down the expenses of the consumer but will help to relieve the potato grower who for the past few years has been hard hit by the low prices he has received. He needs the help of the consumer to dispose of his supplies now in storage. Large storage supplies depress the early potato market, so that all classes of potato growers are affected.

If we would then save some money and at the same time help the situation of our potato growers, we will "eat more spuds".

WANDERING NOTES OF AN ITINERANT SEEDMAN

J. M. Hurley, Syracuse, N. Y.

In New Jersey, growers, dealers, and Extension Agencies are agreed that fifteen per cent of even the reduced 1924 potato acreage was grown on soil not suited to the potato crop. That central New Jersey has profited by the bitter experience of the past four years is indicated by the almost complete abandonment of the Giant variety, the rapid substitution of other crops than potatoes on those soils not suited to potatoes and the growing demand for certified seed. The experience of two Central Jersey dealers this spring is indicative of some changes that are taking place there. One dealer who used to be one of the leading distributors of Giant seed potatoes in a section where 75 per cent of the acreage was devoted to that variety has bought only one car of Giants out of between 70 and 80 carloads of seed, mostly certified Cobblers with a few certified Green Mountains and white skin Rurals. Another smaller dealer there sold 18 carloads of seed last spring only two of which were certified. This spring his customers have so reduced their acreage that he is handling only 14 carloads of seed, but only two carloads are non-certified seed.

"Long Island Potatoes" And Some Other Crops Too

Growers and dealers on Long Island are also thinking about a little more diversification. This does not mean that every acre suited to potatoes on Long Island will not be so occupied in 1925, but for the past few seasons in some sections of the Island there has been a tendence to try potatoes on soil not suited to them. If it is necessary that they pass all of the seed potato inspection and certification requirements as laid down by the Michigan Agricul- present plans hold, more corn and small grains will be sown and in some sections other cash crops will be increased.

Due to the poor summer and fall market for the 1924 Long Island potato crop, harvest was more delayed than usual. As a result much of the cover crop was sown late. The ground has remained frozen most of the time since the unseasonable freeze the middle of November. The consequent poor cover crop and the higher fertilizer prices may possibly have some effect on the acreage and yield of Long Island potatoes this season.

MICHIGAN'S 300 BUSHEL CLUB

H. C. Moore

Thirty-two growers in 1924 qualified for membership in the 300 Bushel Club of the Michigan Potato Producers' Association by each producing 300 or more bushels per acre from an area of at least two continuous acres. The average yield per acre for the 115 acres that were entered in the club was 371 bushels. The highest yield reported was that secured by M. E. Parmelee, Hilliards, who from an area of 12 acres produced an average yield of 512 bushels per acre. Six other growers in the club produced better than 400 bushels per acre. In order for fields to qualify in the club they must be certified by the officials of the Michigan Agricultural College.

In 1923 there were 24 members who qualified in the club and the average yield per acre was 343 bushels.

At the State potato show which will be held at East Lansing, February 2nd to 6th, the work of the 300 Bushel Club will be featured. Each of the club members this year will receive a silver loving cup. Last year, medals were given the members.

MICHIGAN POTATO SHOW

A. G. Tolaas, University Farm, St. Paul, Minn.

It was the privilege of the writer to attend the potato show and meetings of the Michigan Potato Producers' Association held in connection with Farmers' Week at the Michigan Agricultural College, February 2 to 6.

The meeting of the Associations was held on Tuesday forenoon, at which time problems connected with the raising of certified seed, potato fertilizers and other problems relating to the growing and marketing of potatoes were discussed. About seventy-five men interested in potatoes were present. The show was held in the basement of the old Library Building and every inch of available table space was filled with some of Michigan's finest spuds.

Michigan, from the standpoint of potatoes is best known for its Russet Rural or Petoskey potatoes. This variety was very much in evidence at the show, 39 lots being entered in the individual class besides numerous entries in the boys' and girls' club and 60-pound classes. White Rurals were represented by 18 entries, Irish Cobblers by 12, Early Ohios by 11, Green Mountains by 6 and miscellaneous varieties by 8, mostly Triumphs and Russet Burbanks.

Competition in the Russet Rural and White Rural classes was especially keen both in the individual peck and 60-pound entries. In the 60-pound class 12 Russet Rural lots were entered, 5 white

Rurals, 4 Irish Cobblers, 2 Green Mountain and 1 Early Ohio lot. Boys' and Girls' club work was represented by 7 entries.

Three counties, Otsego, Alpena and Gratiot were represented by entries consisting of 12 entries from 12 different growers. They were placed in the order named, Otsego having a splendid exhibit of Russet and White Rurals.

A feature of the Michigan Potato development work is the organization of a 300-Bushel Club. In 1923 twenty-six certified seed growers qualified with an average yield of 342 bushels per acre. In 1924 thirty-six growers qualified with an average yield of 373 bushels per acre. In order to be considered for membership a grower must raise two or more than two acres. The record yield for 1924 was obtained by M. E. Parmelee of Hilliards whose yield was 512 bushels per acre on a 12 acre field.

An interesting feature of the show was a rather extensive exhibit by the State Department of Agriculture illustrating various methods of grading packing potatoes, specimens showing the various kinds of defects and blemishes which are of importance in grading operations.

An exhibit showing the effect of environment on type of tubers showed some striking differences. In this exhibit two varieties were used, namely Irish Cobbler and Rurals, starting originally with a single tuber of each variety. After enough seed tubers were obtained, each lot was planted in several different localities having entirely different soil types. The results as shown by the tubers exhibited from the different soils surely demonstrated the marked effect of environment in the extreme variations of type obtained.

REPORT OF THE 1925 KAW VALLEY POTATO TRAIN

E. A. Stokdyk, Specialist in Marketing

The 1925 Kaw Valley Potato Train conducted by the Union Pacific Railroad in cooperation with the Extension Division of the Kansas State Agricultural College, reached a total of 2700 people.

Exhibits relating to every phase of potato production were carried in two demonstration cars and meetings were held at the various shipping points in the Valley.

The growers have come to look upon the Potato Train meetings as an annual report on the experiments and demonstrations conducted the previous season. They realize that the purpose of the train is to bring facts and information to their attention that is of importance to them in their potato production.

The progress that has been made in potato improvement is very evident and the growers realize that the Extension Service is aided greatly in the spreading of information by the cooperation of the Union Pacific in conducting the potato train.

It is generally predicted that over 90 per cent of the commercial acreage will be planted with treated seed this year. The grower who is not treating is the exception. The seed treatment equipment demonstrations attracted the growers and the questions concerning relative value of methods in seed treatment were many. The campaign for seed treatment began in 1920 and the acreage planted with treated seed has increased each year.

Standardization and grading of potatoes was emphasized. The use of branded sacks and government inspection service was also stressed. Many growers discussed the use of brands and asked for help in formulating a desirable brand. Three counties signed applications for government inspection service at the potato train meetings. Summaries of previous seasons shipments were given to the growers as a guide to study market news service reports.

The use of legumes as a green manure crop following potatoes was urged by the Soils Specialist. Each year there has been an increase in the use of these crops as a fertilizer with excellent results.

Insect control is well established and the growers were urged to keep up the fight and to watch for new insects that are likely to appear.

Seed from healthy fields and known origin, as a factor in potato production, was recommended. Several growers asked for assistance in locating such fields.

POTATO MEETINGS AND CONTEST

MICHIGAN—During the week of March 16th the Michigan Agricultural College will foster a "Better Seed Week". This work will be very largely brought to the attention of the Michigan growers through the College Radio Broadcasting Station, WKAR, Wednesday night, March 18th will be devoted largely to better seed potatoes and better potato cultural methods. The radio talks being given by the Potato Specialists of the College.

MICHIGAN—The annual meeting of the Michigan Potato Producer's Association will be held at Traverse City, April 16 and 17th. At that time there will be talks and discussions given by some of the most prominent educators and potato growers in the country. In connection with the meetings there will be a special educational exhibit. The tentative program of the meeting is as follows: Address of welcome, Chas. Poor, Supt. of Traverse City Public Schools; address by K. L. Butterfield, Pres. of Michigan Agr'l. College; Michigan potatoes on the Cleveland market, K. B. Pocock, of the K. B. Pocock & Co., Cleveland, Ohio; economics of potato production and marketing, Dr. J. T. Horner, Dept. of Economics, Mich. Agr'l College; successful handling of spraying

machines, J. W. Freeman, Lansing, Mich.; grading and loading certified seed potatoes, H. B. Losey, Elmira, Mich.; seed plots and hill selection of seed potatoes, Fred Schmalzried, Levering, Mich.; selecting and exhibiting show potatoes, Ernest Pettifor, Gaylord, Mich.; methods I use in growing high yields of high quality potatoes, M. E. Parmelee, Hilliards, Mich. The speakers at the banquet Thursday night are—President K. L. Butterfield, Jason Woodman, Paw Paw, Mich. and Hon. J. I. Breck, Mich. State Dept. of Agr., Lansing, Mich.

MICHIGAN—For several years the Michigan Potato Producer's Ass'n. has fostered high school potato judging contests. This year the contest will be conducted at East Lansing during the last week of April. A silver cup and several other medals are awarded the winners of the contest. Last year the silver cup was won by the potato judging team from the Lowell Michigan High School.

POTATO NOTES

Alabama.—The 1924 acreage in Alabama was, in counties that raise potatoes for shipping, 9,315 acres. The estimated acreage for 1925 is 6,641 acres.—**C. L. Isbell, Acting Head of Dept. of Horticulture, College of Agr., Auburn, Ala. Mar. 3.**

Chicago, Illinois.—We have very little to add to our advice last month. The situation remains practically unchanged, weather conditions being more or less a factor in the market at this time of the year.

As usual in March, some folks are trying to size up the number of cars of potatoes left in the various sections and find this an impossible thing to do. It is our experience to find, even little later than this, that it is almost impossible for our loaders in any one section to check up and determine how many cars remain there. Notwithstanding the fact there has been considerable waste in some states, we believe there are still plenty of potatoes left. Whenever there has been a good crop in Michigan, Wisconsin and Minnesota, it has been necessary in the past to find some outlet for a part of these potatoes in the East but due to existing conditions it is unlikely this season.

The recent cold weather has held back seed orders and they will probably come on with a rush which is not a desirable situation from a distributor's point of view. The trade should bear this in mind and avoid disappointment by getting their orders in early.

In a discussion with Prof. James Johnson, of Wisconsin concerning his index seed test work, the writer became very much interested. Perhaps I am more enthusiastic over the results that maybe he expected than even Prof. Johnson, or others, but I can

see a distinct advantage in it, other than the purpose of selecting foundation seed stock. It seems to me that we can check up on our field inspection work and really know something about the seed we are offering to the trade for the current season and thus eliminate some undesirable lots that might get by.

I am also quite convinced that the test plots we now have in the South where potatoes from the fall northern crops can be planted early and field observations made before the seed from which these samples are taken is offered for shipment will prove of great value. We did some of this the past season and are planning to do a great deal more of it next year. We feel that this in connection with the index test method will be very helpful to our work of seed selection.

We find that we can have potato samples dug in August, shipped to Texas, Florida, Louisiana and other states and have quite a reliable field report from these states before this seed is ready to move through the regular channels.

TREATING SEED BEFORE SHIPMENT

Some of our people have taken very enthusiastically to the idea of having their seed treated with hot formaldehyde method before shipment and we have so treated a number of cars this year. If we find that the demand warrants it, we have plans for increasing the capacity of our treating plant in our Blue Island Seed Warehouse. The difficulty of doing this on all shipments is the fact that during the rush period our loading capacity is taxed to the limit. This we hope to overcome by treating seed when it is taken in during the fall months and during this coming fall we shall make some experiments to determine whether or not it may prove advisable to treat the table stock before storing with the idea of eliminating some of the mold and rot which so frequently occurs in storage.

We shall be very glad to have the ideas of any who may have experimented with the hot formaldehyde treatment to determine whether its use before storing the potatoes would tend to help the keeping quality of table stock.—**E. P. Miller of the Alber Miller & Company, March 4.**

Baton Rouge, Louisiana.—The state has been favored with a very open season for planting potatoes and, if the splendid weather continues, our crop will be earlier than last season. The potatoes in our trial plots at the New University farm are just beginning to come up, and prospects are very good for a fine stand.

We are making extensive plans for our 3rd Annual Potato Tour which will be held during the week of April 13-18. A large attendance from outside the state is expected, and we feel that we will have something well worth while in Triumph potatoes grown from certified seed to show them. This past season our potato interests bought certified seed from practically every state that is producing them, and there will be lots from several states on

some farms. One planting in particular comprises a car from Wisconsin, one from Nebraska, and another from Montana. Nebraska is planning to send a pathologist from the college as well as representatives from her certified seed potato marketing association. One of the leading railroads in Louisiana is planning to bring a whole coach load of representatives from that section. Montana has indicated that her pathologist from the agricultural college will be with us at that time and several growers have already expressed their intentions of coming. Minnesota and Wisconsin are each planning to have some of the leaders in their potato development work here, and it is hoped that the other states will be represented. We further expect to be honored by the presence of Dr. L. C. Corbett, Chief of the Office of Horticultural Investigations of the United States Department of Agriculture, Washington, D. C. and Prof. Wm. Stuart the Potato Specialist of the same office. A definite program of the tour will be given a little later. The features will be visiting the plots planted with certified Triumphs from various states as well as trips to some of the large producing territories and, especially, notice of the boys' and girls' club work in this connection.

A representative of the Boggs potato graders has recently passed through this territory and he states that the demand for graders is increasing rapidly. The hand types are the most popular. However, some power equipment is being installed.

We recently visited a demonstration of potato planting with a planter modified to meet the extreme width of the row; namely, 6 feet. This planter with an extension axle and high wheels was doing the work very satisfactorily.

County and home Demonstration Agents report splendid progress with the boys' and girls' club work. The enrollment in this connection will probably reach nine to ten thousand, and we are very grateful to our good friends who made this activity possible through their liberal donations of certified seed and fertilizer.—**G. L. Tiebout, March 3.**

Ohio.—Practically all of Ohio stock was moved in the fall. Because of numerous markets in the southern part of the state no record is kept of car lot movements as the growers usually truck potatoes to market. Northern Ohio potatoes move out much the same way. However, there are a few growers that depend somewhat on home storage for their winter market crop. And in a good many instances the storage stock is going down on late blight.—**N. W. Glines, Feb. 10.**

Houston, Texas.—Our last estimate on the Valley was that 40 per cent to 50 per cent of the intended acreage has been planted prior to January 28th. If intentions to plant are carried out there will be between 6000 and 6500 acres, compared with 3300 planted there last year. A large percentage of the seed potatoes are certified and are shipped from Nebraska. Our Truck Crop Specialist will cover the Eagle Lake, Simonton and Wharton districts in the

near future and we will have a more accurate check than is now obtainable. However, after talking to some of the best informed people in Houston, it seems that the acreage will be a little less than last year, but it is a little too early to form a definite opinion. The plantings will run from 80 to 90 per cent Triumphs for the State and 10 to 20 per cent Cobblers. There is an increased interest in certified seed. The quality of seed is good with less scab than usual. It is reported that a larger per cent of the seed in the Houston District is coming from Maine than last year. They are shipped by water and are not certified stock. Some are also coming from Minnesota, Nebraska, and a few from North Dakota.—**Stauffer Chemical Co., Feb. 7.**

Wharton, Texas.—Potato planting in this section commenced about the middle of February and was completed by the last part of the month, under ideal conditions with the possible exception of a slight deficiency of moisture. Acreage for the immediate locality is about half usual amount or about 1200 acres.

Our planters use northern grown seed almost exclusively with less than 5 per cent certified. About 95 per cent of the potatoes planted in this locality are Triumphs. We are trying to arouse more interest in the use of better seed, potato diseases, etc.—**J. O. Graham, County Agent, Mar. 9.**

Virginia.—Planting the early crop of Cobblers in Tidewater, began about the middle of February, and, due to favorable weather the latter part of the month, much of the crop has been planted in the vicinity of Norfolk and the lower end of Northampton County. The percentage of the crop planted is much higher than it was last year at this time. It is still rather early to make any accurate estimate of the reduction in acreage of potatoes planted this year as compared with 1924. In the vicinity of Norfolk it is very likely there will be at least a twenty per cent decrease in acreage as compared with last year. In the lower end of Northampton County, one of the best potato producing sections in Tidewater, the acreage will not be materially reduced, at least not more than ten per cent. It is probable that a slightly greater reduction will be made in the upper end of Northampton and in Accomac Counties.

The seed potato demonstrations which have been conducted for several years by the Extension Division of the Agricultural Experiment Station at Blacksburg, and the Virginia Truck Experiment Station will be continued this year. On the demonstration plats last year the Virginia mountain grown cobblers gave results equal to those secured by the very best strains of northern grown seed and should this performance be repeated again this year, it is likely there will be a big demand for Virginia mountain grown seed, as the freight rates are much less from the mountain section than from the northern districts, and it will also be ad-

vantageous in opening up a new industry within the State.—**H. H. Zimmerly, Mar. 5.**

Wisconsin.—The annual state meeting of Wisconsin Potato interests was held at Madison during Farmers' Course Week—February 2 to 6. A feature of the Week's program was an exhibit representing fourteen (14) counties in Wisconsin. The show this year was not competitive but purely educational. It was installed in the rotunda of the State Capitol.

The state departments having direction of organized work prepared educational exhibits. Most important among these was an exhibit showing the work in progress on mosaic control. Diseased and healthy plants were removed from the Horticultural Department greenhouses to the exhibit floor at the State Capitol. Members of the Legislature were particularly interested in a review of the tuber index work in progress in mosaic control. Exhibits showing standards and grades, disease and insect control, and spraying operations were also featured.

Several conferences were held during the week to perfect plans on the following lines of work: Seed potato inspection, mosaic control on the Triumph variety, grade standards for certified seed, reorganization plan of the Wisconsin Potato Growers Association.

Plans for Potato Work in 1925

Efforts will be made in 1925 to perfect further the lines of field improvement work that in recent years has resulted in the development of Potato Belts in the state. A study of conditions upon the new soils of the state in upper Wisconsin has determined certain climatic and soil conditions of first importance in determining the varieties that can be successfully grown. Disease studies have also had an important bearing on this condition.

Observations made in connection with seed inspection records have also brought out these factors limiting the variety belts in Wisconsin. The best progress in all the specialized phases of the industry such as the seed trade has been made in sections where these matters have been given attention by potato growing organizations.

Conferences held among organized seed interests this winter in Wisconsin have emphasized the need of continued effort on the part of inter-state seed interests to come to a better basis of defining and administering grades both in relation to seed and table stock shipments.

Two difficulties seem apparent; one the tendency toward rough handling of seed shipments in producing territory and the other a tendency toward an over exacting standard in certain markets where damage incident to handling and shipping have not been given consideration.—**J. G. Milward, Feb. 18.**

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Write or wire for delivered prices on

Russet Rurals, White Rurals, Green Mountains, Cobblers, and Early Ohios

Everything inspected and certified by the Michigan Agricultural College. No varietal mixture and less than 1 per cent of Mosaic or other disease permitted.

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is immature, vigorous, practically disease-free, and will be carefully sorted and packed in new even-weight branded sacks, sealed by authorized inspectors.

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SEED POTATO CERTIFICATION NOTES

THE POTATO SITUATION IN ALBERTA

J. W. Scannell

Tuber inspection in Alberta was completed on the second of March. Very few lots were passed that were offered for bin inspection. Although 183 acres passed field inspection only about two-thirds of this amount was given bin inspection. The reason being that the season of 1924 was not very favourable for potato production and consequently the yield was low. This, coupled with a reduced area planted, caused a shortage, with the result that prices for table stock were high. These high prices attracted the grower and he sold the progeny of his certified fields for table stock rather than bother to grade to certification standards.

The reason why a large number of the lots inspected were not passed was due to soft rot in the stem end. At digging time the weather was wet and the result was that bacteria made their entrance at the stem end.

The varieties that passed inspection were Irish Cobbler, Wee MacGregor, Netted Gem (Russet Burbank) and a few Rural Russet. There is a good demand for Early Ohios but unfortunately there were very few grown and no large lot offered for bin inspection.

A few lots of Irish Cobblers were found to have spindle tuber—the first pronounced signs of this disease the writer has seen in the Prairie Provinces. A considerable amount of silver scurf was found in some areas.

Up to the present the Irish Cobbler has been a very popular potato and held first place. However, it is going out of favour on account of its deep eyes and hollow hearts. It was recommended for its quality and earliness. It usually ripened well and for this reason it has grown for a main crop potato rather than for the early market as it is further south. Netted Gems are more or less in favour but on account of the low yield one gets on dry land they are often considered unprofitable. Wee MacGregors and other Green Mountain types are coming into favour.

At present New Brunswick potatoes are being placed on the Calgary market for table use and are competing favourably with local potatoes and with potatoes from British Columbia. It is quite possible that some certified stock will find its way west from New Brunswick.—**March 3.**

BRITISH COLUMBIA

CERTIFIED SEED POTATO NOTES ON 1924 CROP

E. R. Bewell, Field Inspecter

The past year showed considerable improvement in the amount of certified seed grown and greater interest in the growing of same. One hundred sixty-three growers with a total of 296.50 acres had their fields inspected. Two hundred forty acres passed the first field inspection. Two hundred acres passed the second field inspection and 165.75 acres passed the first tuber inspection. This is about 70 per cent increase over the previous year. The amount of seed to be tagged will be about double that of the previous year when 3,000 sacks were tagged.

Several growers have sold their potatoes as a commercial crop on account of the good price being obtained the past year or two and this has greatly reduced the amount of seed which could be tagged or sold as certified seed.

The price of seed this year is $70 per ton in ¼-ton lots or larger and the demand is very keen for the seed at this price. This price is quite reasonable as commercial potatoes are retailing in Victoria, B. C. from $3.25 for best grade down to $2.75 for second grade. Single sacks of certified seed can be purchased at $4.00 per 100 lbs.

The main varieties grown here at present included for inspection are Netted Gem, Burbank, Green Mountain, Gold Coin, Sir Walter Raleigh for late or main crop, and Early Rose, Early St. George, Early Surprise, and Early Ohio as early varieties. Other varieties are being tested out to see if they are suitable to grow in B. C.

Fertilizers are being used to ascertain if quality can be improved and yields increased.

An uniform sack suitably printed is being used throughout British Columbia this year, which will soon become well known.

The British Columbia Certified Seed Potato Growers' Association is organized and incorporated, and is helping the growers dispose of their seed this year. There are 13 local potato growers' associations formed to look after the interests of the growers and five districts forming locals, and it looks now as if the patient and persistent work of the Department of Agriculture for the improvement of the potato in British Columbia is being realized and the potato industry placed on a firm foundation.

Sabin, Minnesota.—The largest shipment of Certified Seed a trainload from the Red River Valley was made on February 25th.

The potatoes were a careful selection made by Messrs. Koppen and Picha of the Red River Certified Seed Company of Moorhead, Minnesota. Their destination being points along the B. & Q. railway in southern Indiana. The distribution of this shipment was made in cooperation with the Extension Division of Purdue University, LaFayette, Indiana.—**Frank H. McCabe, Mar. 5.**

NEW YORK SEED POTATO CERTIFICATION STANDARDS IN 1925

Karl Fernow, Chief Inspector
New York State College of Agriculture

The certification standards which will probably be used in New York in 1925 are given below.

A. To be eligible for inspection a field* must conform to the following rules:
   1. Each field must be represented by a sample of 100 tubers taken from the same seed stock and planted at Ithaca.
   2. Fields immediately adjoining one another will be accepted for inspection only if separated by at least four feet of space unplanted, or planted to some other crop, or if the division is clearly marked at each end of the field by substantial and conspicuous markers that can be readily seen by the inspector from various points in the field.
   3. A portion of a field will not be accepted for inspection.

B. To be certified a field must conform to the following rules:
   1. The sample plot mentioned above will be inspected from time to time. Fields may be disqualified if at any inspection of the sample the percentage of diseases exceeds the following: Mosaic 9 per cent, Leafroll 7 per cent, Spindle tuber 7 per cent, Yellow dwarf 4 per cent, all combined 10 per cent.
   2. A field or portion thereof may be disqualified if an adjoining field shows a high percentage of virus diseases. At least two rows of the inspected field next to the diseased field shall be discarded for each 5 per cent of virus diseases found in the adjoining field and the discarded product not sold as seed.
   3. At each inspection, a field, in order to pass, must not show more of any disease or defect than the percentage indicated below.

In the case of Spaulding Rose, 5 per cent Spindle, 7 per cent of all virus diseases and 10 per cent of all diseases mentioned will be allowed at each inspection.

   4. The grower must agree to rogue out from those fields passing, directly after each inspection, all undesirable plants as indicated above and, in addition, all giant hills before digging, the roguing in every case to include all vines and tubers of such plants.
   5. The presence or proximity of any unusual and dangerous disease such as black wart shall disqualify a field.

* The term "field" as here used applies to the area occupied by one variety of potatoes which is covered by one inspection report, undivided by fences, ditches, highways, other crops, or natural barriers.

McCABE BROTHERS
GROWERS AND SHIPPERS
RED RIVER CERTIFIED SEED POTATOES
Varieties for Sale
IRISH COBBLER, EARLY OHIO and TRIUMPH
SABIN, MINNESOTA

6. The field must receive good culture and show good control of leaf diseases and insect pests. Poor soil conditions and uneven or weak stands may disqualify a field.
7. Such factors as yield, conformity to group type, bruising, insect injury, scab and rhizoctonia shall be considered by the certifying agency.

C. Certified seed to be sold as such must conform to the following rules:
1. Seed stock must be graded to conform to U. S. No. 1 grade as minimum.
2. The certification tag furnished by the certifying agency shall be attached to all packages containing certified seed and shall have written, stamped or printed on it in addition to matter required by the certifying agency, the inspection field number and a report from the inspection record giving the maximum percentage of each of the following tuber-carried diseases: Mosaic, leaf roll, spindletuber, black leg, wilt and yellow dwarf.

Changes Made For 1925 Standard

Besides some changes in wording and arrangement the following changes in the provisions have been made:

(1) A specific tolerance for virus diseases in the sample has been set.

(2) A requirement regarding the elimination of stock grown near a diseased field has been inserted to replace the old provision that "proximity to diseased fields shall be considered".

(3) The amount of Mosaic allowed in the field has been reduced from 4 per cent at the first and 3 per cent at the second inspection, to 3 per cent at the first and 2 per cent at the second inspection.

(4) The amount of spindle tuber allowed in the field has been reduced from 3 per cent to 2 per cent at the first two inspections.

(5) The amount of Yellow dwarf at all inspections has been reduced from 1 per cent to 0.5 per cent.

(6) The amount of all virus diseases allowed has been reduced from 5 per cent at the first and 4 per cent at the second inspection

to 4 per cent at the first and 3 per cent at the second inspection.

(7) The total amount of disease allowed at the first two inspections has been specified.

(8) A special standard has been set for the Spaulding Rose variety allowing a greater amount of Spindle tuber in this variety.

The reasons for these changes are given below. The numbers refer to the above list of changes.

To provide against an unreasonable amount of roguing and errors in field inspections due to masking. (1).

To make the standard more specific and automatic. (1), (2).

To make the standard conform more nearly to that suggested by the Potato Association of America at the Washington meeting. (3), (4), (5), (6), (7).

Because the former provision was inoperative. (5), (6).

To make the standard more workable and applicable to existing conditions. (8).

DISEASE	INSPECTION First	Second	Tuber
Mosaic	3%	2%	
Leaf roll	2	1	
Spindle tuber	2	2	2%
Yellow dwarf	0.5	0.5	0.5
All above virus diseases	4	3	
Wilt	2	2	
Stem end browning	–	–	5
Black leg	2	1	
Weak plants	2	2	
Varietal mixture	3	0.5	0.5
Late blight rot	–	–	(5 in field (2 in bin
All diseases mentioned	8	5	

ORGANIZED SEED GROWERS ENDORSE LOADING POINT INSPECTION

J. M. Hurley

At the eleventh annual meeting of the New York Co-operative Seed Potato Association, Inc., Syracuse, N. Y. held in connection with Cornell Farmer Week, the members adopted a resolution strongly indorsing joint State and Federal loading point inspection service and petitioning the state Legislature to grant the appropriation the State Department of Farms and Markets is seeking with which to continue and extend this service. For the last year this Association which markets its members certified seed potatoes under the "Blue Tag" brand has been employing loading

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point inspection wherever it was available This spring the Association expects to have its carlots inspected at twenty-four of the thirty-five points from which it ships.

NOTES ON RECENT LITERATURE

ADAMS, PHILIP.—Agriculture in Malta.—*Consular Rpt. Nov. 4, 1924 from Valetta, Malta. Data taken from the Government Gazette of October 24, 1924.*

The total numer of acres under cultivation in Malta in 1924 was 42,950 acres of which 996 were in potatoes. The total production of potatoes is stated to be 11,007 tons or 11.05 tons per acre or 412.5 bu. It is probable that this yield does not represent one crop but perhaps two or three during the year. The value of the spring summer and winter crops of potatoes was placed at £191,406 ($454,963) or $41.33 per ton. The Gazette reports a strong outbreak of potato blight affecting the winter crop and to a considerable extent the spring crop as well causing great damage. Spraying with Bordeaux was adopted on an unprecedented scale and the greater part of the early crop as well as the whole of the main crop was saved from appreciable injury.—**W. Stuart.**

ANONYMOUS.—1,600 acres of potatoes.—*Fruit Trade Journal and Produce Record*, 72: *20, Feb. 14*, ----.

"Vero, Fla. Feb. 11. The condition of the 1,600 acres of potatoes in St. Lucie County is good and the movement will begin around March 1."—**Walter M. Peacock.**

BARNUM, H. L.—Feeding potatoes.—*The Michigan Farmer*, 169:*6, Feb. 7, 1925.*

When potatoes are fed as a supplement to grain and hay, they furnish a very welcome and much needed addition to the dairy ration, and are considered equal in value to good corn silage. As silage is worth from $7.00 to $10.00 per ton, potatoes for feed possess a value of thirty-five to fifty cents a hundred weight. Authorities on feeding at Michigan Agricultural College say that milk should not be fed more than 25 to 35 pounds a day for each 100 pounds of live weight.—**Walter M. Peacock.**

HOPKINS, E. F.—Studies in potato storage.—*Botanical Gazette*, 78: *3, November, 1924.*

The results reported were obtained by the author when studying the relation of storage temperature, hydrogen-ion concentration and sugar content to respiration in potato tubers stored under cold storage conditions. The work was done at the Marble Laboratories, Inc., Canton, Pennsylvania with American Giant, Irish Cobbler, second Crop Irish Cobbler, and Russet Rural potatoes. The temperatures used ranged from 0.83° C to 11.5° C., (30.5° Fahrenheit to 52.7° F.) and respiration was measured in milligrams of carbon dioxide evolved per kilogram per hour. The relation of both temperature and sugar concentration to respiration is recorded in tabular and curve chart form.

The rate of respiration was found to be higher at 0° C. (32° F) than at 4.5° C (40° F.). The curve of respiration for temperatures ranging from 0.83° C. (30.5° F.) to 11.5° C. (52.7° F.) showed the minimum point to be at about 3.0° C. (37.4° F.), the rate being, for a time, higher than this at 0° C. (32° F.). In the study of carbohydrate changes at various temperatures, it was found that at 0° C. (32° F.) sugar accumulation is slow at first, then increases rapidly, and finally decreases. At 4.5° C. (40° F.) sugar content is nearly constant, at 1.17° C., (34° F.) it increases fairly rapidly from the start, while at 83° C. (30.5° F.) there is a gradual increase in total sugar, but a decrease in reducing sugars. The author found that, as usual, sugar accumulated in potatoes stored at 0° C. (32° F.), begins to disappear rapidly when they are stored at 4.5° C. (40° F.). The acceleration of respiration at 0° C. (32° F.) is explained as dependent upon a changing sugar concentration, that is, up to a certain concentration sugar increases respiration, and beyond that inhibits it.

(Editor's note) From the practical standpoint, these studies might justify the conclusion that storage temperatures ranging from 1.17° C. (34° F.) to 3.0° C. (37.4° F.) are to be preferred to storage at 0° C. (32° F.).—**E. V. Hardenburg.**

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SPRAYERS—Traction or Power for Potatoes, Celery, Grapes, or Fruit Trees.
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RAJAN, D. MARUDA.—A new remedy for the potato ring disease.—*Journ. Madras Agri. Students' Union* 12: *281-284. 1924.*

Previous attempts to destroy mycelium of **Phytophthora infestans** in seed potatoes by exposure to dry heat are reviewed. Smith found the thermal death point of Bacillus solanacearum, which causes the brown ring disease, to be 52° C. in 10 minutes. It was experimentally demonstrated that potatoes could withstand 4 hours' exposure at 53° without impairment of germination, whereas 55° injured, and 60° destroyed their vitality. Tubers infected with the brown ring disease were treated for 4 hours at 53° and subsequently gave a crop free from the disease.—**F. Weiss.**

WARREN, G. F. AND F. A. PEARSON.—The Agricultural Situation.—*xvi+306 pp., 106 figs., 1924.* (John Wiley & Sons, Inc., New York.)

The authors discuss in this book the economic effects of fluctuating prices. They present a vast amount of basic data and fundamental facts. The information given should serve as a guide for those interested in the various types of farming or doing investigational and demonstrational work. Chaper 13 is devoted to potatoes under the following headings—price of potatoes, potatoes in North Dakota and Colorado, and effect of local yield on price.—**Walter M. Peacock.**

WILLAMAN, JOHN J. AND RODNEY M. WEST.—A Statistical Study of the Composition of Potato Tubers.—*Journal Series of the Minnesota Agricultural Experiment Station. Paper No. 324.*

The Minnesota Station has made a large number of analyses of potatoes, with the view to their utilizations for industrial alcohol. Tht tubers analyzed represented four varietal groups grown under various environmental conditions. By subjecting this collection of analyses of potato tubers to a statistical study, the authors of this paper have contributed some interesting facts on the chemistry of this crop. The analyses covered specific gravity, dry matter, nitrogen ash, ether extract, starch and sugar.

In a study of this kind it is difficult to segregate the factors so that their individual effects on the composition of the tubers can be noted but from the results of their effort the authors arrive at the following general conclusions. The most marked varietal difference in composition of American potato tubers is between the early and late maturing varieties. The early types are low in dry matter and high in ether extract, minerals, and nitrogenous substances. The actual figures show that these differences are comparatively small except perhaps in the case of the ether extract. The effect of soil could be detected only in a general way from the data at hand. The loam appeared to induce the highest dry matter, nitrogen and ether extract, the sand the lowest dry matter, and the clay the lowest nitrogen. The potatoes grown in the southern localities in Minnesota were higher in nitrogen than those grown in the northern localities

During the growth of the tubers there was a steady increase in dry matter up to the time the vines began to die but the **ratios** among the various constituents remained rather constant. The large and small tubers showed no difference in composition at the same stage of maturity.

In order to ascertain what relations may exist among the various constituents, the coefficients of correlation were calculated for fifty-six samples of tubers. Of special interest is the fact that no correlation of significance was found between specific gravity and either nitrogen or carbohydrates when the latter are calculated to dry bases. A high dry matter tuber may or may not be high in carbohydrates on the dry bases. The same holds for specific gravity and nitrogen. The nitrogen is correlated negatively with carbohydrates and with ash and positively with carbohydrates and with ash and positively with ether extract.

The authors conclude that it should be possible to breed a variety with a higher proportion of protein to carbohydrates and still maintain the desirable culinary properties.

In studying the data in this paper together with similar data by other authors one is impressed with the rather small differences in composition of potatoes of several American varieties, grown under widely different environmental conditions.—**C. O. Appleman.**

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